



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/887,103	06/25/2001	Takahiro Ishizuka	003510-099	7294

7590 03/09/2005

Platon N. Mandros
BURNS, DOANE, SWECKER & MATHIS, L.L.P.
P.O. Box 1404
Alexandria, VA 22313-1404

EXAMINER

SHOSHO, CALLIE E

ART UNIT	PAPER NUMBER
----------	--------------

1714

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/887,103

Applicant(s)

ISHIZUKA, TAKAHIRO

Examiner

Callie E. Shosho

Art Unit

1714

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,9-11,13-17,19 and 21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,3-7,9-11,13-17 and 19 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 12/27/04 has been entered.

2. All outstanding rejections are overcome in light of applicants' amendment and 1.132 declaration filed 12/27/04.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 3-4 and 13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

(a) The scope of claim 3 is confusing given that claim depends on a cancelled claim, namely, claim 2. Should the dependency of claim 3 be changed from claim 2 to claim 1?

Art Unit: 1714

(b) Claim 3 when referring to formula (Cp-6) and (Cp-7) recites that "R₆₃ represents the same groups as listed above". The scope of the claim is confusing because it is not clear where this refers. In order to avoid possible confusion, it is suggested that the substituents for R₆₃ are explicitly listed.

Similar suggestion is made in claim 3 where similar claim language is recited, namely, when the claim refers to formula (Cp-14) and to formula (Cp-15).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. Claims 1, 3-7, 9-11, 13-17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keoshkerian et al. (U.S. 5,545,504) in view of *Hawley's Condensed Chemical*

Art Unit: 1714

Dictionary, Breton et al. (U.S. 6,384,108), and either JP 03231975 or Suzuki et al. (U.S. 5,508,421).

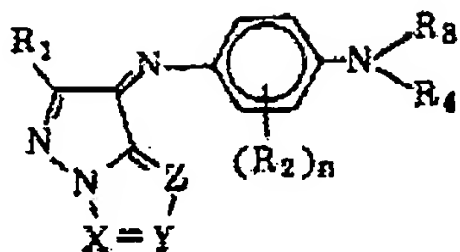
Keoshkerian et al. disclose water-based ink jet ink wherein the ink comprises 10-90% colored particulates containing oil-soluble dye and AB block copolymer which has number average molecular weight of 2,000-500,000 and is formed from hydrophobic segment which is obtained from hydrophobic monomer such as (meth)acrylate and from hydrophilic segment that is obtained from hydrophilic monomer such as acrylic acid. The colored particulates possess particle size of 0.3-10 microns. The ink contains solvent such as ethylene glycol which is well known, as found in *Hawley's Condensed Chemical Dictionary* (page 468), to possess boiling point of 197.2 °C. From example II, it is calculated that the ratio of block copolymer to dye is 0.4 (2/5) which falls within the ratio calculated from present claim 16. There is also disclosed ink jet recording method wherein the above ink is jetted from printer onto substrate (col.1, lines 59-61, col.2, lines 4-11, col.7, lines 46-52 and 61-64, col.8, lines 35-41, col.9, line 22, col.11, lines 31-39, col.11, line 40-col.12, line 21, col.20, lines 5-17 and 31-35, col.21, lines 8-14, col.21, lines 55-58, col.22, lines 1-2, col.23, lines 19-30, and examples II and III).

The difference between Keoshkerian et al. and the present claimed invention is the requirement in the claims of (a) specific type of oil-soluble dye, (b) amount of ionic group in the block copolymer, and (c) process of forming the colored particulates.

With respect to difference (a), Keoshkerian et al. disclose colored particulates comprising oil-soluble dye, but there is no disclosure of specific oil-soluble dye as presently claimed.

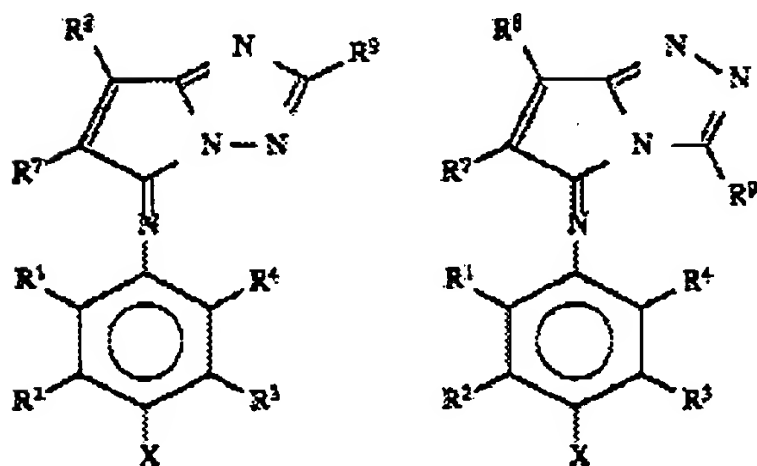
JP 03231975 is drawn to ink jet inks and discloses oil-soluble dye of the formula:

Art Unit: 1714



wherein R_3 and R_4 , which correspond to presently claimed R^4 and R^5 , are each hydrogen, alkyl, cycloalkyl, aralkyl, or aryl group, R_2 , which corresponds to presently claimed R^2 or R^3 , is hydrogen, cyano, alkyl, alkoxy, aryl, amino, or halogen, R_1 , which corresponds to presently claimed R^{63} (see formula Cp-4, Cp-5, and Cp-6 in present claim 3), is hydrogen, alkyl, aryl, or amino, X and Y are independently either $-CR_5=$ or $-N=$, where R_5 , which corresponds to presently claimed R^{64} , R^{65} , or R^{66} (see formula Cp-4, Cp-5, and Cp-6 in present claim 3), is hydrogen, alkyl, aryl, or heterocyclic, group, and presently claimed B^1 is $=C(R^6)-$ and B^2 is $-C(R^7)=$ wherein R^6 and R^7 are each hydrogen (abstract and claim 1). The motivation for using such dye is to produce a printed image with good hue (page 6, first full paragraph).

Alternatively, Suzuki et al. disclose the use of oil-soluble dyes of the formula:



wherein X is -OH or -NR⁵R⁶ where R⁵ and R⁶, which correspond to presently claimed R⁴ and R⁵, are each hydrogen, alkyl group, aryl group, or heterocyclic group, R⁴ and R³ which correspond to presently claimed R² and R³, are each hydrogen, aryl, alkyl, cyano, carbamoyl, cyano, sulfamoyl, or nitro group, R⁷ which corresponds to presently claimed R₈₇, is carbamoyl, alkoxy carbamoyl, or cyano, and R⁸ and R⁹ which correspond to presently claimed R₈₈ and R₈₉, respectively, are each hydrogen, aryl, alkyl, cyano, carbamoyl, cyano, sulfamoyl, or nitro group (see formula Cp-18 and Cp-19 in present claim 3), and presently claimed B¹ is =C(R⁶)- and B² is -C(R⁷)= wherein R⁶ and R⁷ are each hydrogen (col.3, lines 38-67, col.4, lines 12-29, col.6, line 42-col.7, line 57, col.9, lines 12-52, col.10, lines 14-30, and col.13, lines 3-5 and 21-23). The motivation for using such dyes is that they possess high absorption and high fastness to light and heat (col.2, lines 7-10 and col.3, lines 14-21).

With respect to difference (b), Keoshkerian et al. disclose that the block copolymer is obtained from hydrophilic monomer including those containing ionic group such as acrylic acid, however, there is no disclosure regarding the amount of ionic group present.

Breton et al., which is drawn to ink jet ink comprising colored particles of an emulsifiable ionic polymer containing dye, disclose using 2.5-15 mol% hydrophilic monomer in the polymer in order to control the particle size of the polymer (col.4, lines 21-27).

In light of the motivation for using specific dye disclosed by JP03231975 or Suzuki et al. as described above as well as the motivation for using specific amount of hydrophilic monomer disclosed by Breton et al. as described above, it therefore would have been obvious to one of

ordinary skill in the art (i) to use such dye in the ink of Keoshkerian et al. in order to produce ink which produces printed image with good hue, or alternatively, to produce ink with high fastness to light and heat and (ii) to control the amount of hydrophilic monomer and thus, ionic group, in the block copolymer of Keoshkerian et al. to amounts including that presently claimed in order to produce block polymer with suitable particle size, and thereby arrive at the claimed invention.

With respect to difference (c), it is noted that there is no disclosure in Keoshkerian et al., JP 03231975, Suzuki et al., or Breton et al. that the colored particulates are prepared by emulsification by one of pouring water into an organic solvent phase containing the block copolymer and the oil soluble dye or pouring organic solvent phase into water as required in present claim 14.

However, it is noted that “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Further, “although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product”, *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

Therefore, absent evidence of criticality regarding the presently claimed process for forming the colored particulates and given that Keoshkerian et al. in view of Breton et al. and either JP 03231975 or Suzuki et al. disclose product, i.e. colored particulate, as claimed, it is

clear that Keoshkerian et al. in view of Breton et al. and either JP 03231975 or Suzuki et al. meet the requirements of present claim 14.

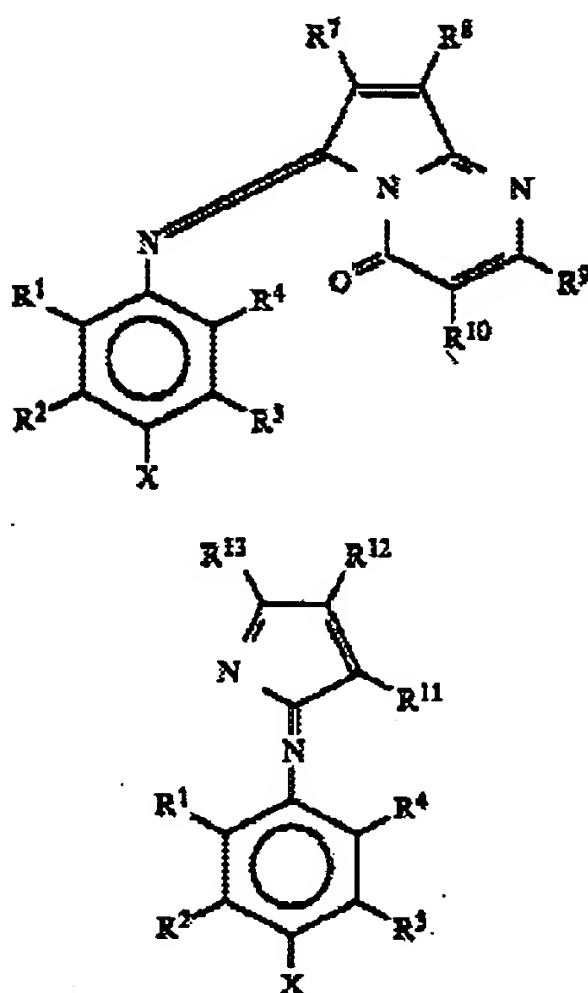
7. Claims 1, 3-7, 9-11, 13-17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Keoshkerian et al. (U.S. 5,545,504) in view of *Hawley's Condensed Chemical Dictionary*, Breton et al. (U.S. 6,384,108), and Mikoshiba et al. (U.S. 5,344,933).

Keoshkerian et al. disclose water-based ink jet ink wherein the ink comprises 10-90% colored particulates containing oil-soluble dye and AB block copolymer which has number average molecular weight of 2,000-500,000 and is formed from hydrophobic segment which is obtained from hydrophobic monomer such as (meth)acrylate and from hydrophilic segment that is obtained from hydrophilic monomer such as acrylic acid. The colored particulates possesses particle size of 0.3-10 microns. The ink contains solvent such as ethylene glycol which is well known, as found in *Hawley's Condensed Chemical Dictionary* (page 468), to possess boiling point of 197.2 °C. From example II, it is calculated that the ratio of block copolymer to dye is 0.4 (2/5) which falls within the ratio calculated from present claim 16. There is also disclosed ink jet recording method wherein the above ink is jetted from printer onto substrate (col.1, lines 59-61, col.2, lines 4-11, col.7, lines 46-52 and 61-64, col.8, lines 35-41, col.9, line 22, col.11, lines 31-39, col.11, line 40-col.12, line 21, col.20, lines 5-17 and 31-35, col.21, lines 8-14, col.21, lines 55-58, col.22, lines 1-2, col.23, lines 19-30, and examples II and III).

The difference between Keoshkerian et al. and the present claimed invention is the requirement in the claims of (a) specific type of oil-soluble dye, (b) amount of ionic group in the block copolymer, and (c) process of forming the coloring particulates.

With respect to difference (a), Keoshkerian et al. disclose colored particulates comprising oil-soluble dye, but there is no disclosure in either reference of specific oil-soluble dye as presently claimed.

Mikoshiba et al. disclose ink suitable for use in ink jet printing wherein the ink comprises oil-soluble dye identical to that presently claimed wherein the dye is one of the following:



where X, which corresponds to presently claimed A, is -OH or -NR⁵R⁶ where R⁵ and R⁶, which correspond to presently claimed R⁴ and R⁵, are each hydrogen, alkyl, aryl, or heterocyclic group, R³ and R⁴, which correspond to presently claimed R² and R³, are each hydrogen, halogen, alkyl, aryl, cyano, etc., presently claimed B¹ is =C(R⁶)- and B² is -C(R⁷)= wherein R⁶ and R⁷ are each hydrogen, R⁷, R⁸, R⁹, R¹⁰, which correspond to presently claimed R₉₁, R₉₂, R₉₃, and R₉₄,

respectively, are each hydrogen, alkyl, aryl, cyano, etc. (see formula Cp-21 in present claim 3), and R^{11} , R^{12} , and R^{13} , which correspond to presently claimed R_{84} , R_{83} , and R_{82} , respectively, are each hydrogen, aryl, alkyl, aryl, alkoxy, etc., (see formula Cp-16 in present claim 3) (col.2, lines 55-68, col.3, lines 1-25, col.3, line 65-col.4, line 13, and col.40, line 59).

The motivation for using such dye is that the dye has high fastness in heat, light, moisture, air, and chemicals and is inexpensive and easy to synthesize (col.2, lines 10-15).

With respect to difference (b), Keoshkerian et al. disclose that the block copolymer is obtained from hydrophilic monomer including those containing ionic group such as acrylic acid, however, there is no disclosure regarding the amount of ionic group present.

Breton et al., which is drawn to ink jet ink comprising colored particles of an emulsifiable ionic polymer containing dye, disclose using 2.5-15 mol% hydrophilic monomer in the polymer in order to control the particle size of the polymer (col.4, lines 21-27).

In light of the motivation for using specific dye disclosed by Mikoshiba et al. as described above as well as the motivation for using specific amount of hydrophilic monomer disclosed by Breton et al. as described above, it therefore would have been obvious to one of ordinary skill in the art (i) to use such dye in the ink of Keoshkerian et al. in order to produce ink which possesses high fastness in heat, light, moisture, air, and chemicals and (ii) to control the amount of hydrophilic monomer and thus, ionic group, in the block copolymer of Keoshkerian et al. to amounts including that presently claimed in order to produce block polymer with suitable particle size, and thereby arrive at the claimed invention.

With respect to difference (c), it is noted that there is no disclosure in Keoshkerian et al., Mikoshiba et al., or Breton et al. that the colored particulates are prepared by emulsification by

one of pouring water into an organic solvent phase containing the block copolymer and the oil soluble dye or pouring organic solvent phase into water as required in present claim 14.

However, it is noted that “[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process.” *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). Further, “although produced by a different process, the burden shifts to applicant to come forward with evidence establishing an unobvious difference between the claimed product and the prior art product” *In re Marosi*, 710 F.2d 798, 802, 218 USPQ 289, 292 (Fed. Cir. 1983).

Therefore, absent evidence of criticality regarding the presently claimed process for forming the colored particulates and given that Keoshkerian et al. in view of Breton et al. and Mikoshiba et al. disclose product, i.e. colored particulate, as claimed, it is clear that Keoshkerian et al. in view of Breton et al. and Mikoshiba et al. meet the requirements of present claim 14.

Allowable Subject Matter

8. Claim 21 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Claim 21 would be allowable if rewritten in independent form as described above given that there is no disclosure or suggestion in the “closest” prior art, namely, Keoshkerian et al.

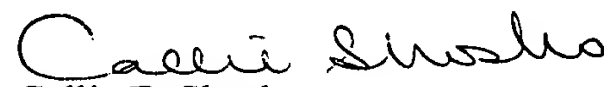
Art Unit: 1714

(U.S. 5,545,504) of co-emulsification dispersion method for producing the ink as required in present claim 21.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Callie E. Shosho whose telephone number is 571-272-1123. The examiner can normally be reached on Monday-Friday (6:30-4:00) Alternate Fridays Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vasu Jagannathan can be reached on 571-272-1119. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Callie E. Shosho
Primary Examiner
Art Unit 1714

CS
3/3/05